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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/583,032   | 04/27/2007  | Stuart Grossart      | 4590-544            | 9133             |
| 33308  | 7590        | 12/11/2009           | EXAMINER            |                  |
| LOWE HAUPTMAN HAM & BERNER, LLP<br>1700 DIAGONAL ROAD, SUITE 300<br>ALEXANDRIA, VA 22314 |             |                      |                     | LOPEZ, FRANK D   |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/583,032             | GROSSART, STUART    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | F. DANIEL LOPEZ        | 3745                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 8/27/09.
- 2a) This action is **FINAL**.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 34-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 34-64 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/27/09</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____.                         |

***Response to Amendment***

Applicant's arguments filed August 27, 2009, have been fully considered but they are not deemed to be persuasive.

Applicant's arguments with respect to claims 62 and 64 have been considered but are deemed to be moot in view of the new grounds of rejection. The new grounds of rejection are necessitated by a different interpretation of the claim (see below).

Concerning claims 62 and 64, Applicant states that the pressure in the actuator is controlled by a control apparatus and the pressure is determined according to measured values of the position sensor. This is confusing. The examiner understands claims 62 and 64 to mean that desired pressures in the chambers are calculated. The examiner also understands, that the servomotor can be controlled based on information from the position and pressure sensors; which controls pressures in the chambers. What is not understood is why the desired pressures in the chambers are calculated, before calculating the control for the servomotor.

Note that this is a different understanding from the understanding used in the 112 rejection. In the 112 rejection, it was assumed that the chamber pressure calculated (i.e. determined) was the pressure in the accumulator, which is (roughly) the pressures in the chambers. Even with this understanding, there is no indication that this pressure was determined by the position of the actuator.

Applicant states, concerning claim 57, that the held fluid is pumped to the extend and retract chambers by the reversible pump. This is confusing. Claim 55 (from which claim 57 depends) claims "holding fluid transferred from, or to be transferred to, the extend chamber in a state sufficiently pressurized to generate a back-pressure" which is understood to mean that the held fluid is in the accumulator, and that is can be moved to the extend chamber. The limitation that it can be pumped to the extend chamber appears to be redundant with the limitation of claim 55 concerning being transferred to the extend chamber. The portion that it can be pumped to the retract chamber is wrong, since the only fluid pumped to the retract chamber is from the extend chamber, which is not the held fluid (from the accumulator).

Applicant states that neither Hiraki et al nor NIkolaus disclose a fluid supply arranged to supply fluid to both extend and retract chambers at substantially the same pressure; but gives no support for the statement concerning Hiraki et al. The examiner disagrees. Hiraki et al clearly recognizes that the closer the pressure in the accumulator is to counterbalancing the load, the less energy the pump needs to move the load (column 18 line 15-25); which is the same idea that applicant recognizes (abstract, last sentence). As such, the pressure in the accumulator is set so that the pressures supplied to the extend and retract chambers, although not exactly equal, are substantially equal.

Concerning NIkolaus, Applicant cites column 43-15 (sic, possibly 4-13), as discussing the different pressures in the extend and retract chambers. The discussion (e.g. column 4 line 3-32) of the workings of the machine of NIkolaus suggests that the load is variable and that the pressure in the accumulator is set to counterbalance the load (similar to, although more explicitly stated in Hiraki et al). As such, the pressures supplied to the extend and retract chambers, although not exactly equal, are substantially equal (i.e. substantially more equal than if the accumulator was not there or set to a less counterbalancing pressure).

For the reasons stated above, it is understood that each of Hiraki et al and NIkolaus disclose the above discussed limitation.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

It is unclear how the pressure of the fluid supplied to extract and retract chambers is determined according to the position/extension of the actuator rod (claim 62 and 64). This limitation is interpreted as meaning that the pressure in the accumulator sets the pressure in the chambers, so that, as the piston moves back and

forth, the pressure in the accumulator is adjusted to change the pressure in the chambers. It is clear that the pump 24 and the landing valve 28 of fig 4 could be used to increase and decrease, respectively, the pressure in the accumulator, but there is no indication that the control of the pump or the landing valve is tied to the position of the piston. If this limitation means that as the piston moves back and forth, the volume of fluid in the accumulator changes, thereby changing the pressure, Applicant should so state, and clarify this issue.

Applicant's alternate interpretation of these claims is also not supported by the specification. There is no indication that the desired pressures in the chambers are actually calculated, before calculating the control values for the servomotor, controlling the pump (see arguments concerning these claims, above).

#### ***Claim Rejections - 35 USC § 112***

Claims 34-64 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 46 line 1-3 "a fluid supply operable to be in fluid communication with...said first fluid transfer means...and said actuator chamber" appears to be wrong, since the supply (24) is only in communication with the fluid vessel (17) and the second transfer means (B), but not the chamber or the first transfer means.

In claim 57 line 1-2 "holding said held fluid in communication with said extend chamber and said retract chamber" is wrong, since the held fluid is in the accumulator and therefore not in communication with the chambers.

In claim 62 and 64 line 1-3, it is unclear how the "pressure of the pressurized fluid simultaneously supplied to extract and retract chambers is determined according to the position/extension of the actuator rod". See discussion under objection to the specification.

In claim 64 line 2 "simultaneously" should be deleted.

Claims not specifically mentioned are indefinite, since they depend from one of the above claims.

***Claim Rejections - 35 USC § 102***

Claims 34-45, 47-57 and 61-64, inasmuch as they are definite, are rejected under 35 U.S.C. § 102(b) as being anticipated by Hiraki et al. Hiraki et al discloses an actuator and method of using comprising a piston in an actuator chamber defining an extend (PL) and a retract (PS) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (P1) arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump (P2) arranged to transfer fluid between the extend chamber and a hydraulic accumulator (10).

Claims 34-38, 47-57 and 61-64, inasmuch as they are definite, are rejected under 35 U.S.C. § 102(b) as being anticipated by NIkolaus. NIkolaus discloses an actuator and method of using comprising a piston (18) in an actuator chamber defining an extend (13) and a retract (11) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (15) arranged to reversibly transfer fluid between the extend and retract chamber and a hydraulic accumulator (16) holding fluid transferred from the extend chamber.

***Claim Rejections - 35 USC § 103***

Claim 46 is rejected under 35 U.S.C. § 103 as being unpatentable over Hiraki et al in view of NIkolaus. Hiraki et al discloses all of the elements of claim 46, as discussed in the above 102 rejection; but does not disclose a fluid supply in communication with the accumulator and the second pump.

NIkolaus teaches, for an actuator comprising a piston (18) in an actuator chamber defining an extend (13) and a retract (11) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (15) arranged to reversibly transfer fluid between the extend and retract chamber and a hydraulic accumulator (16) holding fluid transferred from the extend chamber; that a fluid supply is connected to the accumulator, for the purpose of maintaining a constant pressure in the accumulator (column 3 line 63-65).

Since Hiraki et al and Nikolaus are both from the same field of endeavor, the purpose disclosed by Nikolaus would have been recognized in the pertinent art of Hiraki et al. It would have been obvious at the time the invention was made to one having ordinary skill in the art to connect a fluid supply to the accumulator of Hiraki et al, as taught by Nikolaus, for the purpose of maintaining a constant pressure in the accumulator. Since the second pump is connected to the accumulator, the supply would also be connected to the second pump.

Claims 34-45 and 47-64 are rejected under 35 U.S.C. § 103 as being unpatentable over Applicant's admitted prior art in view of Hiraki et al and MacLeod. Applicant's admitted prior art discloses a vehicle motion simulator and method of using comprising a motion platform (3, fig 1) moved by actuators (2) which are controlled by servo valves (page 1 line 25-26); but does not disclose that the actuator includes a piston in an actuator chamber defining an extend and a retract chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump arranged to transfer fluid between the extend chamber and a hydraulic accumulator.

Hiraki et al teaches that an actuator controlled by a reversible pump and method of using can include a piston in an actuator chamber defining extend (PL) and retract (PS) chambers, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (P1) arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump (P2) arranged to transfer fluid between the extend chamber and a hydraulic accumulator (10).

MacLeod teaches replacing a control of an actuator (54, 56) with a servo valve (34, fig 2), with a control using a reversible pump (72, fig 3), for the purpose of eliminating complex and costly intervening valving (column 1 line 25-28), and to have a system that is accurate, relatively insensitive to leakage and reliable in use (column 1 line 32-34)

Since the actuator of Applicant's admitted prior art is controlled by a servo valve; since MacLeod teaches advantages of using a reversible pump, instead of a servo valve, to control an actuator and since Hiraki et al teaches details of a reversible pump control of an actuator; it would have been obvious at the time the invention was made to one having ordinary skill in the art to control the actuator of Applicant's admitted prior art, such that the actuator includes a piston in an actuator chamber defining an extend and a retract chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump arranged to transfer fluid between the extend chamber and a hydraulic accumulator, as taught by Hiraki et al, for the purpose of eliminating complex and costly intervening valving, and to have a system that is accurate, relatively insensitive to leakage and reliable in use, as taught by MacLeod.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571-272-4821. The examiner can normally be reached on Monday-Thursday from 6:00 AM -4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is 571-273-8300. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.

*/F. Daniel Lopez/*

F. Daniel Lopez  
Primary Examiner  
Art Unit 3745  
December 11, 2009